

CLAIMS

1. A removable medium recording/reproduction device having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the device or according to a command from the outside of the device to transport a removable medium into the device and to set the removable medium in a reproducible state or to transport and expel the removable medium out of the device, the device comprising:

a medium expelling prohibition information detector which detects whether or not medium expelling prohibition information is recorded in a predetermined area on a removable medium; and

a controller which, if a record of medium expelling prohibition information is detected by the medium expelling prohibition information detector, does not perform expelling of the medium due to a change in state of the switches or a command from the outside of the device, and which, if no record of medium expelling prohibition information is detected by the medium expelling prohibition information detector, operates the removable medium loading/ejection mechanism to expel the medium according to the change in state of the switches or the command from the outside of the device.

2. A removable medium recording/reproduction device having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the device or according to a command from the outside of the device to transport a removable medium into the device and to set the removable medium in a reproducible state or to transport and expel the removable medium out of the device, the device comprising:

a medium expelling prohibition information detector which detects whether or not medium expelling prohibition information is recorded in a predetermined area on a removable medium;

a removable medium detector which detects whether or not a removable medium is in the device; and

5 a controller which does not perform expelling of the medium due to a change in state of the switches or a command from the outside of the device during detection of the existence/nonexistence of the removable medium by the removable medium detector, during detection by the medium expelling prohibition information detector as to whether or not medium expelling prohibition information on the removable medium is  
10 recorded, or if a record of medium expelling prohibition information is detected by the medium expelling prohibition information detector, and

which, if the existence of a removable medium in the device is detected by the removable medium detector, and if no record  
15 of medium expelling prohibition information on the removable medium is detected by the medium expelling prohibition information detector, operates the removable medium loading/ejection mechanism to expel the medium according to the change in state of the switches or the command from the  
20 outside of the device.

3. The removable medium recording/reproduction device according to claim 1 or 2, wherein the removable medium loading/ejection mechanism cannot forcibly expel the removable medium during power-down of the device.

25 4. The removable medium recording/reproduction device according to claim 1 or 2, wherein the controller expels the medium according to the change in state of all the switches or the command from the outside of the device in the time period from reception of a medium expelling prohibition cancellation  
30 command from the outside of the device to detection of medium expelling prohibition information in the predetermined area on the removable medium performed by the medium expelling prohibition information detector upon reinsertion of the removable medium into the device.

5. The removable medium recording/reproduction device according to claim 4, wherein the medium expelling prohibition information includes a medium expelling prohibition cancellation code, and the controller accepts the medium expelling prohibition cancellation command as a valid command only if the medium expelling prohibition cancellation command includes the medium expelling prohibition cancellation code or data obtained by converting the medium expelling prohibition cancellation code by a certain rule.

6. A removable medium recording/reproduction device having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the device or according to a command from the outside of the device to transport a removable medium into the device and to set the removable medium in a reproducible state or to transport and expel the removable medium out of the device, the device comprising:

a nonvolatile storage which is capable of holding storage contents even after power supply for the removable medium recording/reproduction device has been shut off, and which is rewritable;

a medium expelling prohibition information detector which detects whether or not medium expelling prohibition information is recorded in a predetermined area on a removable medium; and

a controller which records a medium expelling prohibition flag in the nonvolatile storage when the medium expelling prohibition information detector detects a record of medium expelling prohibition information,

which, if the medium expelling prohibition flag is recorded in the nonvolatile storage, does not perform expelling of the medium due to a change in state of the switches or a command from the outside of the device, and

which, if the medium expelling prohibition flag is not recorded in the nonvolatile storage, operates the removable

medium loading/ejection mechanism to expel the medium according to the change in state of the switches or the command from the outside of the device.

7. The removable medium recording/reproduction device  
5 according to claim 6, wherein the removable medium loading/ejection mechanism cannot forcibly expel the removable medium during power-down of the device.

8. The removable medium recording/reproduction device  
10 according to claim 6, wherein the controller clears the medium expelling prohibition flag in the nonvolatile storage when the medium expelling prohibition cancellation command from the outside of the device is received.

9. The removable medium recording/reproduction device  
15 according to claim 8, wherein the medium expelling prohibition information includes a medium expelling prohibition cancellation code, and the controller accepts the medium expelling prohibition cancellation command as a valid command only if the medium expelling prohibition cancellation command includes the medium expelling prohibition cancellation code  
20 or data obtained by converting the medium expelling prohibition cancellation code by a certain rule.

10. The removable medium recording/reproduction device according to any one of claim 1, 2, or 6, wherein the removable medium loading/ejection mechanism has:

25 a forced expelling mechanism capable of forcibly expelling the medium during power-down of the device; and

a forced expelling mechanism changer which mechanically changes the forced expelling mechanism between an inoperable state and an operable state, and

30 wherein the controller operates to set the forced expelling mechanism in the inoperable state by controlling the forced expelling mechanism changer if the medium expelling prohibition information is recorded, and to set the forced expelling mechanism in the operable state by controlling the forced

expelling mechanism changer if the medium expelling prohibition information is not recorded.

11. The removable medium recording/reproduction device according to claim 10, wherein the forced expelling mechanism in the removable medium loading/ejection mechanism is arranged to forcibly expel the medium by inserting a pin into a hole provided in a front surface of the device during power-down of the device, and

wherein the forced expelling mechanism changer of the removable medium loading/ejection mechanism is arranged to mechanically change the forced expelling mechanism between the inoperable state and the operable state by opening and closing the hole provided in the front surface of the device.

12. The removable medium recording/reproduction device according to claim 10, wherein the forced expelling mechanism in the removable medium loading/ejection mechanism is arranged to forcibly expel the medium by inserting a pin into a hole provided in a front surface of the device during power-down of the device and by pressing a forced expelling lever interlocked with the loading/ejection mechanism with the pin, and

wherein the forced expelling mechanism changer of the removable medium loading/ejection mechanism is arranged to selectively change the forced expelling lever between a position at which the medium can be forcibly expelled by inserting the pin into the hole and a position at which the medium cannot be forcibly expelled by inserting the pin into the hole.

13. A medium expelling control method for a removable medium recording/reproduction device having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the device or according to a command from the outside of the device to transport a removable medium into the device and to set the removable medium in a reproducible

state or to transport and expel the removable medium out of the device, the method comprising:

5 determining whether or not medium expelling prohibition information is recorded in a predetermined area on a removable medium;

not performing expelling of the medium due to a change in state of the switches or a command from the outside of the device if it is determined that the medium expelling prohibition information is recorded; and

10 operating the removable medium loading/ejection mechanism to expel the medium according to the change in state of the switches or the command from the outside of the device if it is determined that the medium expelling prohibition information is not recorded.

15 14. A medium expelling control method for a removable medium recording/reproduction device having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the device or according to a command from  
20 the outside of the device to transport a removable medium into the device and to set the removable medium in a reproducible state or to transport and expel the removable medium out of the device, the method comprising:

not performing expelling of the medium due to a change  
25 in state of the switches or a command from the outside of the device if it is determined that detection as to whether or not a removable medium exists in the device is being performed, if it is determined that detection as to whether or not medium expelling prohibition information is recorded in a  
30 predetermined area on a removable medium is being performed, or if it is determined that medium expelling prohibition information is recorded; and

operating the removable medium loading/ejection mechanism to expel the medium according to the change in state of the  
35 switches or the command from the outside of the device if it

is determined that a removable medium exists in the device, and if it is determined that medium expelling prohibition information is not recorded on the removable medium.

15. The medium expelling control method for a removable medium recording/reproduction device according to claim 13 or 14, further comprising:

canceling medium expelling prohibition when a medium expelling prohibition cancellation command is received from the outside of the device; and

10 expelling the medium according to the change in state of all the switches or the command from the outside of the device in the time period from the cancellation of the medium expelling prohibition to detection of a record of the medium expelling prohibition information in the predetermined area on the removable medium performed upon reinsertion of the removable medium into the device.

16. The medium expelling control method for a removable medium recording/reproduction device according to claim 15, wherein the medium expelling prohibition information includes a medium expelling prohibition cancellation code, the method further comprising making determination as to whether or not the medium expelling prohibition cancellation command includes the medium expelling prohibition cancellation code or data obtained by converting the medium expelling prohibition cancellation code by a certain rule, and accepting the medium expelling prohibition cancellation command as a valid command if it is determined that the medium expelling prohibition cancellation command includes the medium expelling prohibition cancellation code or the data.

17. A medium expelling control method for a removable medium recording/reproduction device having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the device or according to a command from the outside of the device to transport a removable medium into

the device and to set the removable medium in a reproducible state or to transport and expel the removable medium out of the device, and a nonvolatile storage, the method comprising:

5 determining whether or not medium expelling prohibition information is recorded in a predetermined area on a removable medium;

10 recording a medium expelling prohibition flag in the nonvolatile storage when the medium expelling prohibition information detector detects a record of medium expelling prohibition information;

making determination as to whether or not the medium expelling prohibition flag is recorded in the nonvolatile storage;

15 not performing expelling of the medium due to a change in state of the switches or a command from the outside of the device if it is determined that the medium expelling prohibition flag is recorded in the nonvolatile storage; and

20 operating the removable medium loading/ejection mechanism to expel the medium according to the change in state of the switches or the command from the outside of the device if it is determined that the medium expelling prohibition flag is not recorded in the nonvolatile storage.

18. The medium expelling control method for a removable medium recording/reproduction device according to claim 17, further comprising clearing the medium expelling prohibition flag in the nonvolatile storage when the medium expelling prohibition cancellation command from the outside of the device is received.

19. The medium expelling control method for a removable medium recording/reproduction device according to claim 18, wherein the medium expelling prohibition information includes a medium expelling prohibition cancellation code, the method further comprising making determination as to whether or not the medium expelling prohibition cancellation command includes the medium expelling prohibition cancellation code or data obtained by  
35 converting the medium expelling prohibition cancellation code

by a certain rule, and accepting the medium expelling prohibition cancellation command as a valid command if it is determined that the medium expelling prohibition cancellation command includes the medium expelling prohibition cancellation code or the data.

20. The medium expelling control method for a removable medium recording/reproduction device according to any one of claim 13, 14, or 17, wherein the removable medium loading/ejection mechanism has a forced expelling mechanism capable of forcibly expelling the medium during power-down of the device, and a forced expelling mechanism changer which mechanically changes the forced expelling mechanism between an inoperable state and an operable state, the method further comprising:

setting the forced expelling mechanism in the inoperable state by controlling the forced expelling mechanism changer not to expel the medium according to the change in state of the switches or the command from the outside of the device, and

setting the forced expelling mechanism in the operable state by controlling the forced expelling mechanism changer to operate the removable medium loading/ejection mechanism so as to expel the medium according to the change in state of the switches or the command from the outside of the device.

21. A removable medium expelling control method for an information processing apparatus having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the apparatus or according to a command from the outside of the apparatus to transport a removable medium into the apparatus and to set the removable medium in a reproducible state or to transport and expel the removable medium out of the apparatus, a controller which reads out data from the removable medium or records data on the removable medium, and which processes data read out from the removable

medium, and an input device for enabling a user to operate the controller as desired, the method comprising:

5 determining whether or not medium expelling prohibition information is recorded in a predetermined area on a removable medium;

not performing expelling of the medium due to a change in state of the switches or a command from the input device if it is determined that the medium expelling prohibition information is recorded; and

10 operating the removable medium loading/ejection mechanism to expel the medium according to the change in state of the switches or the command from the input device if it is determined that the medium expelling prohibition information is not recorded.

15 22. A removable medium expelling control method for an information processing apparatus having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the apparatus or according to a command  
20 from the outside of the apparatus to transport a removable medium into the apparatus and to set the removable medium in a reproducible state or to transport and expel the removable medium out of the apparatus, a controller which reads out data from the removable medium or records data on the removable  
25 medium, and which processes data read out from the removable medium, and an input device for enabling a user to operate the controller as desired, the method comprising:

not performing expelling of the medium due to a change in state of the switches or a command from the outside of the  
30 apparatus if it is determined that detection as to whether or not a removable medium exists in the apparatus is being performed, if it is determined that detection as to whether or not medium expelling prohibition information is recorded in a predetermined area on the removable medium is being

performed, or if it is determined that the medium expelling prohibition information is recorded; and

operating the removable medium loading/ejection mechanism to expel the medium according to the change in state of the switches or the command from the outside of the apparatus if it is determined that removable medium exists in the apparatus, and if it is determined that the medium expelling prohibition information is not recorded on the removable medium.

23. The removable medium expelling control method for an information processing apparatus according to claim 21 or 22, further comprising:

canceling medium expelling prohibition by a certain operation on the input device; and

expelling the medium according to the change in state of all the switches or the command from the outside of the apparatus in the time period from the cancellation of the medium expelling prohibition to detection of a record of the medium expelling prohibition information in the predetermined area on the removable medium performed upon reinsertion of the removable medium into the apparatus.

24. The removable medium expelling control method for an information processing apparatus according to claim 23, wherein the medium expelling prohibition information includes a medium expelling prohibition cancellation code, the method further comprising, when an input including the medium expelling prohibition cancellation code or data obtained by converting the medium expelling prohibition cancellation code by a certain rule is provided as a medium expelling prohibition cancellation command by an operation on the input device, accepting the medium expelling prohibition cancellation command as a valid command.

25. The removable medium expelling control method for an information processing apparatus according to claim 21 or 22, further comprising recording the medium expelling prohibition

information in the predetermined area on the recordable removable medium by an operation on the input device.

26. The removable medium expelling control method for an information processing apparatus according to claim 21 or 22,  
5 further comprising:

generating a medium expelling prohibition cancellation code obtained by inputting a sequence of characters by an operation on the input device or by converting the input sequence of characters by a certain rule;

10 recording medium expelling prohibition information including the generated medium expelling prohibition cancellation code in the predetermined area on the recordable removable medium;

when the medium expelling prohibiting state is canceled  
15 by an operation on the input device, canceling the medium expelling prohibition if an input including the medium expelling prohibition cancellation code or data obtained by converting the medium expelling prohibition cancellation code by a certain rule is provided; and

20 expelling the medium according to a change in state of all the switches or a command from the input device in the time period from the cancellation of the medium expelling prohibition to detection of a record of the medium expelling prohibition information in the predetermined area on the medium  
25 performed upon reinsertion of the removable medium into the apparatus.

27. The removable medium expelling control method for an information processing apparatus according to claim 21 or 22, further comprising:

30 forcibly recording the medium expelling prohibition information in the predetermined area on the removable medium when data is recorded on the removable medium; and

setting the apparatus in a medium expelling prohibiting state after the completion of the recording.

28. A removable medium expelling control method for an information processing apparatus having a removable medium loading/ejection mechanism which operates according to a change in state of switches each provided on an outer portion or on an inner portion of the apparatus or according to a command from the outside of the apparatus to transport a removable medium into the apparatus and to set the removable medium in a reproducible state or to transport and expel the removable medium out of the apparatus, a nonvolatile storage, a controller which reads out data from the removable medium or records data on the removable medium, and which executes data read out from the removable medium, and an input device for enabling a user to operate the controller as desired, the method comprising:

determining whether or not medium expelling prohibition information is recorded in a predetermined area on a removable medium;

recording a medium expelling prohibition flag in the nonvolatile storage if it is determined that medium expelling prohibition information is recorded;

determining whether or not the medium expelling prohibition flag is recorded in the nonvolatile storage;

not performing expelling of the medium due to a change in state of the switches or a command from the outside of the apparatus if it is determined that the medium expelling

prohibition flag is recorded in the nonvolatile storage; and

operating the removable medium loading/ejection mechanism to expel the medium according to the change in state of the switches or the command from the input device if it is determined that the medium expelling prohibition flag is not recorded in the nonvolatile storage.

29. The removable medium expelling control method for an information processing apparatus according to claim 28, further comprising:

canceling medium expelling prohibition by a certain operation on the input device; and

clearing the medium expelling prohibition flag in the nonvolatile storage when the medium expelling prohibition is canceled.

30. The removable medium expelling control method for an  
5 information processing apparatus according to claim 29, wherein  
the medium expelling prohibition information includes a medium  
expelling prohibition cancellation code, the method further  
comprising, when an input including the medium expelling  
10 prohibition cancellation code or data obtained by converting  
the medium expelling prohibition cancellation code by a certain  
rule is provided as a medium expelling prohibition cancellation  
command by an operation on the input device, accepting the  
medium expelling prohibition cancellation command as a valid  
command.

15 31. The removable medium expelling control method for an  
information processing apparatus according to claim 28, further  
comprising recording the medium expelling prohibition  
information in the predetermined area on the recordable  
removable medium by an operation on the input device, and  
20 recording the medium expelling flag in the nonvolatile storage.

32. The removable medium expelling control method for an  
information processing apparatus according to claim 28, further  
comprising:

generating a medium expelling prohibition cancellation  
25 code obtained by inputting a sequence of characters by an  
operation on the input device or by converting the input sequence  
of characters by a certain rule;

recording medium expelling prohibition information  
including the generated medium expelling prohibition  
30 cancellation code in the predetermined area on the recordable  
removable medium, and recording the medium expelling  
prohibition flag in the nonvolatile storage;

making determination as to whether or not an input including  
the medium expelling prohibition cancellation code or data  
35 obtained by converting the medium expelling prohibition

cancellation code by a certain rule has been provided as a medium expelling prohibition cancellation command by an operation on the input device;

clearing the medium expelling prohibition flag in the nonvolatile storage if it is determined that an input including the medium expelling prohibition cancellation code or data obtained by converting the medium expelling prohibition cancellation code by a certain rule has been provided.

33. The removable medium expelling control method for an information processing apparatus according to claim 28, further comprising:

forcibly recording the medium expelling prohibition information in the predetermined area on the removable medium when data is recorded on the removable medium; and

setting the apparatus in a medium expelling prohibiting state after the completion of the recording.

34. The removable medium expelling control method for an information processing apparatus according to any one of claim 21, 22, or 28, wherein the removable medium loading/ejection mechanism has a forced expelling mechanism capable of forcibly expelling the medium during power-down of the apparatus, and a forced expelling mechanism changer which mechanically changes the forced expelling mechanism between an inoperable state and an operable state, the method further comprising:

setting the forced expelling mechanism in the inoperable state by controlling the forced expelling mechanism changer not to expel the medium according to the change in state of the switches or the command from the input device, and

setting the forced expelling mechanism in the operable state by controlling the forced expelling mechanism changer to operate the removable medium loading/ejection mechanism so as to expel the medium according to the change in state of the switches or the command from the input device.